

WHAT IS CLAIMED:

1. A medical device comprising a structure having a maximum thickness and a surface upon which a coating material is to be disposed, wherein:
 - the surface comprises at least one outermost portion and a plurality of depressions;
 - the depressions occupy at least about 80% of the surface area of the surface;
 - at least one of the depressions contain a coating material; and
 - the outermost portion of the surface is substantially free of any coating material.
2. The medical device of claim 1, wherein the coating material contains a biologically active material.
3. The method of claim 1, wherein the coating material comprises a polymeric material.
4. The medical device of claim 1, wherein a majority of the depressions contain the coating material.
5. The medical device of claim 1, wherein the depressions occupy at least about 90% of the surface area of the surface.
6. The medical device of claim 1, wherein a cross-section of at least one of the depressions is shaped in a configuration selected from at least one of a truncated circle, a square, a rectangle, a truncated diamond, or a triangle.
7. The medical device of claim 1, wherein the outermost portion extends over at least one of the depressions.
8. The medical device of claim 1, wherein the maximum depth of the depressions is about 4% to 20% of the maximum thickness of the structure.
9. The medical device of claim 8 wherein the maximum depth of the depressions is about 6% to 10% of the maximum thickness of the structure.
10. The medical device of claim 2, wherein the coating material further comprises a polymeric material.

11. The medical device of claim 1, wherein the coating material contained in the depression comprises a first layer and a second layer disposed over the first layer.
12. The medical device of claim 11, wherein the first layer comprises a biologically active material.
13. The medical device of claim 12, wherein the second layer is substantially free of the biologically active material.
14. The medical device of claim 1, wherein the device is a stent and the surface is located on the outer surface of the stent.
15. The medical device of claim 14, wherein the stent further comprises an inner surface that is substantially free of the coating material.
16. A system for coating a medical device having a tubular portion with an outer surface, wherein the system comprises:
 - a coating material source containing a coating material; and
 - a roller having a surface, wherein:
 - the roller is situated relative to the coating material source so that the coating material in the coating source can be transferred to the roller surface; and
 - the roller is situated relative to the outer surface of the tubular portion so that the roller surface can transfer the coating material transferred to the roller surface onto the outer surface of the tubular portion.
17. The system of claim 16, which further comprises a reservoir that continuously supplies the coating material source with coating material.
18. The system of claim 16 wherein the roller surface contacts the outer surface of the tubular portion.
19. The system of claim 17, wherein the reservoir is a fermentor containing cells.
20. The system of claim 17, wherein the coating material is circulated between the reservoir and the coating material source.

21. The system of claim 16 wherein the surface of the roller comprises a plurality of grooves.
22. A system for coating a medical device having a tubular portion with an outer surface, wherein the system comprises:
 - a coating material source containing a coating material;
 - a first roller having a surface; and
 - a second roller having a surface, wherein:
 - the first roller is situated relative to the coating material source so that the coating material in the coating material source can be transferred to the first roller surface;
 - the first roller and second roller are situated relative to each other so that the first roller can transfer the coating material transferred to the first roller surface to the second roller surface, and
 - the second roller is situated relative to the tubular portion so that the second roller can transfer the coating material transferred to the second roller surface to the outer surface of the tubular portion.
23. The system of claim 22, wherein the surface of the second roller is rougher than the surface of the first roller.
24. The system of claim 22, wherein the surface of the first roller contacts the surface of the second roller and the surface of the second roller contacts the outer surface of the tubular portion.
25. The system of claim 22, further comprising a mechanism for removing excess coating material from the surface of the first roller.
26. The system of claim 25, wherein the mechanism is at least one of a metering roller, a doctor blade or an air knife.
27. The system of claim 22 further comprising an energy source for converting the coating material applied to the outer surface of the tubular portion into a coating.
28. The system of claim 27, wherein the energy source is a heater.
29. The system of claim 27, wherein the energy source is an ultraviolet source.

30. A system for coating a medical device having a tubular portion with an outer surface, wherein the system comprises:

a coating material source containing a coating material;

a first roller having a surface;

a second roller having a surface;

a third roller having a surface; and

a flexible webbing material position around the second and third rollers, wherein:

the first roller is situated relative to the coating material source so that the coating material can be transferred to the first roller surface;

the first roller and webbing are situated relative to each other so that the first roller can transfer the coating material transferred to the first roller surface to the webbing; and

the webbing is situated relative to the tubular portion so that the webbing can transfer the coating material transferred to the webbing to the outer surface of the tubular portion.

31. The system of claim 30, wherein the webbing contacts the outer surface of the tubular portion.

32. The system of claim 30, further comprising a mechanism for removing excess coating material from the webbing.

33. A system for coating a medical device having a tubular portion with an outer surface, wherein the system comprises:

a roller having a surface; and

an applicator for applying an adhesion protein to the roller surface, wherein:

the roller is situated relative to the tubular portion so that the roller can transfer the adhesion protein to the outer surface; and

the outer surface is exposed to a cell suspension.

34. The system of claim 33 wherein the adhesion protein is fibronectin.

35. The system of claim 33 wherein the adhesion protein is transferred to the outer surface as the outer surface is simultaneously exposed to the cell suspension.